

the Conservation Resource

Fall 2004, Volume 1, Number 1



What's in it for your students—and you?

As a Missouri teacher, you perform a miracle every day in capturing the imagination of your students and preparing them for a life on this planet. We know you're overloaded with demands and information. We know your time is rare and precious. And we know that an understanding of the natural world is not exactly on par with knowing the basics of reading, writing and arithmetic when it comes to testing and funding.

However, using the outdoors as a unifying theme not only can help students learn to create a sustainable, healthy place to live, but also can enhance their learning of the basics. So what raw materials, we've asked ourselves, can we provide here for you to spin into gold with your students?

Every day, they're bombarded with images of distant deserts, tropical rainforests and calls to help in places far and wide. Yet how many of your students know what lives, breathes and dies in their own backyards? How many are even comfortable stepping beyond the sidewalk or understand the value of cutting a tree to save the forest?

The Conservation Resource, like nature, is changing and adapting. With this new publication, we hope to give you meaningful teaching tools in the form of conservation content—building blocks that you can slice and dice and reconfigure to meet your classroom style, student ages and needs. The basic blocks will be the nature of Missouri—the facts, the issues, and additional resources within easy reach.

Although we're gearing the information to teachers of grades 7-12, we hope educators of all grades will find these building blocks of use. If nothing else, you might learn something for yourself about key conservation ideas affecting quality of life here in Missouri.

If you think we're on the mark, I'd love to hear from you. If you think we're off the mark, then I'd really love to hear from you. Missouri is the most amazing state in its support of conservation education and expanded conservation efforts in general through the 1/8 of one percent conservation sales tax that we all pay. **Please help us serve you better by giving your voice to shape what we do.**

Yours truly,

Lorna Domke
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Serving Nature and You

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An entire issue devoted to
Deer Management

Managing Deer Populations

Missouri is blessed with a diverse landscape that supports a variety of wildlife. Deer are one of the most popular species, both for hunters and for wildlife observers. The Conservation Department, with the help of hunters and landowners, has managed deer since its inception in 1937. Because of the diverse landscape, deer herds have grown at different rates in different parts of the state. The Department's goal has been to maintain a healthy herd statewide, thus providing excellent hunting and viewing opportunities and keeping the number of conflicts between people and deer to a minimum. To achieve these results, the Department's biologists carefully monitor deer and regulate hunting throughout the state. Regulations are set based on deer abundance, deer-human conflicts, number of deer the habitat will support, hunter pressure and public opinion.

Does are too numerous in some areas

Starting in 2002, any-deer permits were valid statewide, allowing hunters to take does throughout the state. This shows that the deer population is strong. However, some areas are feeling the pressure of too many deer. More does need to be harvested in those areas to stabilize the population and produce a deer herd with a variety of ages.

To achieve these deer management goals, the Department proposed testing new hunting regulations in selected counties—not statewide. In these counties, surveys indicate strong interest exists for a balanced sex and age structure, which will also result in more bucks in older age classes.

Creating a better balance of bucks and does and increasing the number of bucks in a variety of age classes are issues faced not just in Missouri but in other states as well. Biologists recognize there are a number of ways to manage the deer herd to achieve these goals. In those states that have pursued this management direction (Arkansas, Michigan, Mississippi, Pennsylvania and others), the most frequent approach is to use a form of antler-point limitations on buck harvest and to expand doe harvest opportunities. Biological assessments of Missouri's deer herd suggest that antler-point limitations would be effective. Missouri biologists also have examined an array of other options, some of which are listed on page 4.

Instructional Ideas

- Conduct a mock public meeting to hear the concerns of constituents regarding the proposed management options.
- Write a persuasive letter to the Department of Conservation in support of a selected option.
- In teams, debate the pros and cons of each option.



Antler Point Restrictions— *Tracking New Ground*

Through public meetings and other communication with constituents, the Missouri Department of Conservation gathered input about deer management options from hunters, landowners and the general public. Over the past year, the Department hosted 23 public meetings throughout the state. At each meeting, five deer management options were presented for public comment (see page 4). This public input, along with responses from statewide surveys of landowners and hunters, coupled with recommendations from the Department's biologists, has resulted in a new antler-point restriction regulation for selected counties. The new regulation begins with the 2004 deer hunting season.

Counties in this pilot management program include the following: Adair, Andrew, Atchison, Boone, Chariton, Cole, Daviess, DeKalb, Franklin, Gasconade, Gentry, Grundy, Harrison, Holt, Howard, Linn, Livingston, Macon, Maries, Miller, Nodaway, Osage, Pulaski, Putnam, Randolph, Schuyler, Sullivan and Worth.

In those selected counties during the archery and firearms deer hunting seasons, an antlered deer must have a minimum of four points on at least one side to be legal. Deer with fewer than four points on at least one side may not be taken. Every point at least one-inch long counts, including the brow tine (the point at the end of the main beam) and any broken tine that is at least one inch long. (See Student Worksheet on page 6.) This restriction applies to all persons hunting in the designated counties, except for youths hunting during the two-day youth portion of the firearms season.

The pilot regulations will be evaluated for up to five years. Surveys will measure hunter and landowner attitudes throughout

(continued on page 3)

(continued from page 2)

the trial, and biological data on the status of the herd will be collected each year. Adjustments will be made if needed. Based on public input, consideration will also be given each year to adding counties to those under this regulation.

An increase in both hunter and landowner satisfaction with deer management is one expected outcome of this regulation. Additional anticipated outcomes include a reduction of overall deer numbers, an increased doe harvest, an increase in adult bucks and a greater potential to keep the deer herd at desired levels in the future. The Conservation Department's goal is to continue the state's hunting and wildlife viewing opportunities while managing a healthy deer population.

Instructional Ideas

- Learn how to count antler points using the Student Worksheet on page 6.
Answers to Student Worksheet: A-12 points; B-6 points; C-8 points; D-6 points; E-19 points
- Using a variety of shed antlers, compare and contrast different sizes while also determining whether or not a shed is typical or non-typical (see page 10).

Chronic Wasting Disease

Chronic Wasting Disease (CWD) belongs to a group of diseases known as transmissible spongiform encephalopathies (TSEs). TSEs cause a fatal degeneration of the brain and include, in addition to CWD in deer and elk, scrapie in sheep, bovine spongiform encephalopathy (mad cow disease) in cattle and Creutzfeldt Jakob disease in humans. Although all of these diseases are TSEs and are believed to be caused by a pathogen called a prion, the prions causing each disease differ.

Deer or elk with CWD show behavioral changes, progressive weight loss, excessive salivation, increased drinking and urination, stumbling and tremors and they often develop pneumonia. The disease is thought to be always fatal to the infected animal, but it can take months or years before the symptoms appear. CWD can tentatively be diagnosed by its symptoms. However, it can only be confirmed by laboratory examination of brain or lymph tissue from the affected animal. At present there is no diagnostic test available to detect it in live animals.

Scientists do not really know how CWD is transmitted. However, evidence suggests that infected deer or elk may transmit the disease through animal to animal contact or by contaminating feed or water sources with saliva, urine or feces. It may be more likely to occur where deer or elk are numerous or gather at artificial feeding or watering sites. At present there is no evidence that CWD can be naturally transmitted from infected deer or elk to sheep or cattle.

A number of public health organizations have reviewed the available scientific information and concluded that at present there is no evidence that CWD in deer or elk can be transmitted to humans. Concern arose in 1997 and 1998 when spontaneous Creutzfeldt Jakob disease occurred in three young U.S. adults who had regularly eaten venison. The Centers for Disease Control and Prevention in Atlanta, Georgia, reviewed the clinical records and pathological studies of all three cases and found no link to CWD.

Even though there is no evidence that chronic wasting disease affects humans and deer meat is safe to eat, hunters can take some common sense precautions by not harvesting deer that appear sick or otherwise abnormal.

To date, chronic wasting disease has not been reported in Missouri. It has been found in free-ranging deer in a very limited number of locations in the Midwestern states of Illinois, Nebraska, South Dakota and Wisconsin, as well as the states of Colorado and Wyoming.

Even though CWD has not been reported in Missouri, steps are being taken to guard against the possible occurrence and spread of this disease. The Department of Agriculture and the Department of Conservation are monitoring the state's wild deer and captive elk and deer for any signs of CWD. They have developed a voluntary CWD monitoring program for captive herds. In the fall of 2002, the Department of Conservation began a three-year effort to check every county in the state for the disease. To date, deer from 60 counties have been tested and all tests have been negative. During the 2004 season, deer from the remaining 54 counties will be tested.

For more information about CWD, visit the Conservation Department web site at <www.missouriconservation.org/hunt/cwd/>.

Instructional Ideas

- Research how other states where CWD has been found in their deer or elk population have dealt or are dealing with this problem.
- Research the other TSE diseases — scrapie, mad cow and Creutzfeldt Jakob. Compare and contrast your findings.

Balancing Buck-to-Doe Ratios:

Management Techniques

Option: Antler restriction

Deer with 4 points or more on at least one side may be taken.

Advantages

- Takes pressure off younger bucks and allows them to grow into an older age class.
- Increases harvest of does as hunters shift harvest pressure from bucks to does.
- Allows majority of hunters to continue to hunt as they prefer because studies show that many Missourians hunt bucks opening weekend and antlerless deer later in the season.
- Allows hunters to take trophy deer when the opportunity arises.

Disadvantages

- If hunters pass up does and only wait for mature bucks to come by, the management goal won't be achieved and more restrictions on harvesting bucks may be necessary in the future.
- Hunters may have trouble distinguishing number of points.

Option: Earn a buck

Before an antlered deer can be taken, a doe must be harvested and checked.

Advantages

- Quickest way to take pressure off bucks and to increase doe harvest.
- Reduces the buck harvest, thus allowing more bucks to grow into an older age class.

Disadvantage

- Usually unpopular with hunters who have had to pass up a buck because they haven't harvested a doe.

Option: Buck quota

Issue limited number of permits for antlered deer.

Advantage

- Takes pressure off bucks and shifts harvest to does.

Disadvantages

- Not popular with hunters who want to hunt bucks, but didn't get an antlered-deer permit.
- May discourage some hunters from going afield so fewer deer, including does, may be taken.

Option: November portion of the firearms deer season after rut

Begin the November portion of the firearms season at the end of November or early December.

Advantage

- Bucks would be less vulnerable and their harvest might be reduced.

Disadvantages

- No guarantee that hunters will harvest more does.
- Hunters may not like moving traditional season.
- Firearms hunters would miss the high buck activity.

Option: Reduce length of buck season

Advantage

- Reduces pressure on bucks, and possibly increases doe harvest.

Disadvantages

- Not popular with the most avid hunters.
- May reduce hunting opportunities and days spent in the field.

Missouri's Deer

White-tailed deer are ungulates, or hoofed mammals, belonging to the family Cervidae. Characteristics distinguishing this group from other hoofed mammals are forked antlers, a four-part stomach and the absence of a gall bladder. The whitetail is the only remaining native ungulate still thriving in Missouri.

In North America, only two native species of deer exist, the white-tailed deer and the mule deer. Within each of these species are many subspecies. For example, the black-tailed deer of the northwestern United States is a subspecies of the mule deer just as the Key deer from Florida is a subspecies of the white-tailed deer. Most Missouri deer are white-tailed deer. A few mule deer are taken by hunters in the western part of the state, but the number reported each year can be counted on one hand.

The white-tailed deer is one of Missouri's most valuable wildlife resources. Each year hunters spend around three million hunter-days in the field pursuing the whitetail, contributing millions of dollars to the economy in the process. Public viewing of deer attracts thousands of visitors to our state's public lands annually. A recent survey of urban and rural Missourians revealed that, of all animals outside a zoo, deer are the species people most prefer to see. It also is a favorite with children. The whitetail was selected as our state mammal by vote of school-age children.

On the down side, deer cause thousands of vehicle accidents on our roadways annually and feed on agricultural and household plantings throughout the state. It is not surprising that the Missouri public has strong feelings toward whitetails, mostly positive, but some negative.

The white-tailed deer is aptly named because the white undersurface of its flag-like tail is about all we see of this superb mammal as it bounds across an opening in the woods.

A whitetail's coat and color tend to change throughout the year. During the summer months, deer are reddish-brown, and their coats are rather thin, less than a quarter-inch thick. By August or September they shed their summer pelage, or coat, and replace it with a thick, brown-grey winter coat sometimes more than 1-inch thick. The molt/shed cycle begins again in April when deer start to grow their summer coats. This almost continual shedding and regrowth requires substantial amounts of protein and energy.

Whitetails have four sets of external glands that are used primarily for communication. Gland secretions can describe a deer's social status, breeding condition and health.



Missouri has a productive deer herd. About 35 percent of all one-year-old does give birth to a single fawn. Does two years and older generally have twins and 10 to 15 per cent have triplets. Most fawns in Missouri are born in late May through the middle of June after a gestation period of around 205 days.

Fawns generally bed by themselves and, if encountered, may appear to have been abandoned, but this is not the case. During the two weeks after birth, the only time the doe spends with her young is when she is nursing them, two or three times a day. The doe beds 100 to 300 yards from her fawns, presumably so that she does not attract predators to them.

Fawns are able to eat solid food within a few weeks after birth and can survive solely on solid food after two months. The amount of nursing gradually decreases after the first month and by September most nursing has ended. As summer progresses, fawns spend increasing time with the doe and by the end of the summer they are together most of the time. Although fawns stay with the doe for an entire year, by September they can survive in her absence.

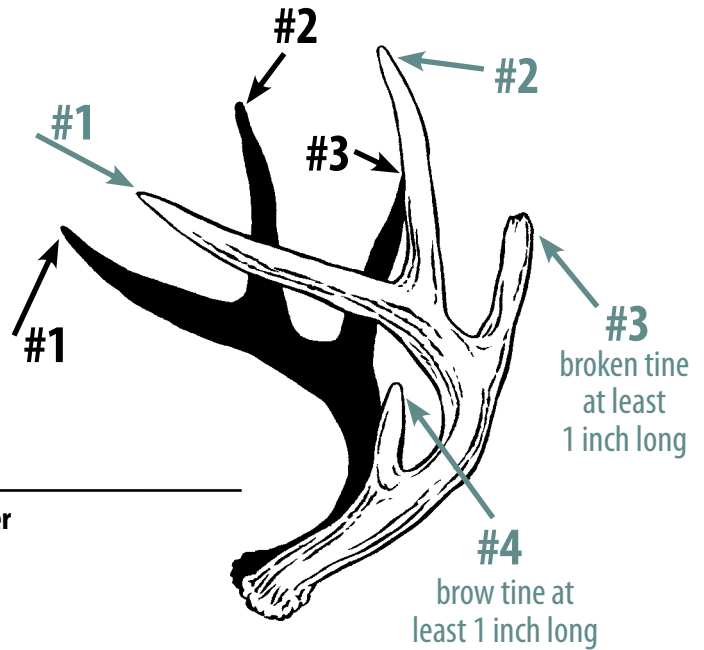
Over 65 percent of the deer harvested by hunters each year are less than two years of age. Heavy hunting pressure is the reason the average age is so young. Hunting is the largest mortality factor of deer in Missouri and, recreational and economic values aside, it is necessary to maintain deer numbers at levels that minimize crop damage and deer/vehicle accidents. Bucks have a higher death rate because they are more active and less wary than does during the hunting season and often are selected by hunters.

How to Count Points

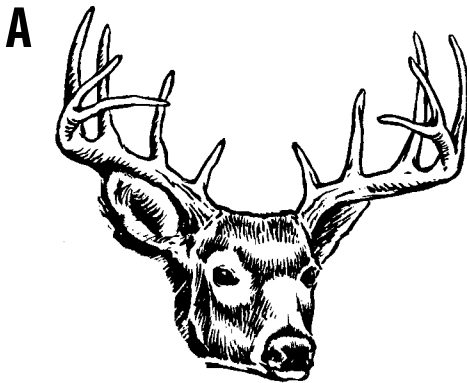
Each of the following counts as a point:

- an antler point, if it is at least 1 inch long
- the brow tine, if it is at least 1 inch long
- the end of the main beam
- any broken tine that is at least 1 inch long

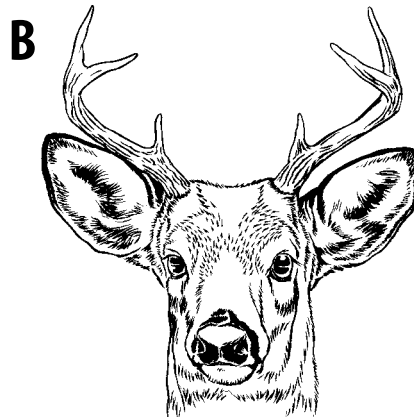
Tines, main beams and brow tines all count as a point if they are at least 1 inch long. A buck with the seven-point rack on the right with three points on one side (labeled in black) and four on the other (labeled in green) is a legal deer in the counties listed on page 2.



Instructions: Using the guidelines above, count the total antler points for each of the deer below.



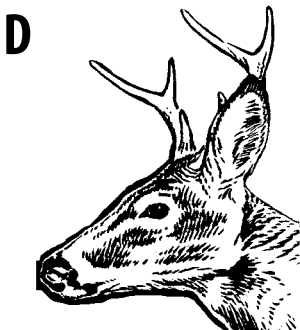
_____ points



_____ points



_____ points



_____ points



_____ points

Missouri's Deer Harvest

The numbers in these tables reflect the annual harvest of white-tailed deer in Missouri for the years 1999–2003. Harvest totals include all does, button bucks and bucks for both the archery and firearms seasons.

Counties with the highest annual harvest

1999	2000	2001	2002	2003
Boone 4,266	Boone 4,633	Boone 5,282	Boone 5,180	Boone 5,676
Callaway 4,295	Callaway 4,835	Callaway 5,714	Callaway 5,541	Callaway 5,635
Macon 4,454	Macon 4,544	Macon 4,809	Macon 4,411	Macon 5,026
Pike 5,036	Pike 5,656	Pike 6,156	Pike 5,673	Pike 6,139
Lincoln 3,419	Oregon 3,918	Benton 4,328	Benton 5,697	Benton 5,789
Osage 3,444	Osage 3,946	Osage 4,302	Franklin 4,540	Texas 4,619
Monroe 3,383	St. Clair 3,621	Franklin 4,368	St. Clair 5,236	St. Clair 4,962

Counties with the lowest annual harvest

1999	2000	2001	2002	2003
Dunklin 133	Dunklin 146	Dunklin 173	Dunklin 310	Dunklin 307
Iron 690	Iron 743	Iron 869	Iron 825	Iron 758
Mississippi 206	Mississippi 264	Mississippi 262	Mississippi 344	Mississippi 285
New Madrid 163	New Madrid 211	New Madrid 268	New Madrid 361	New Madrid 295
Pemiscot 66	Pemiscot 73	Pemiscot 115	Pemiscot 147	Pemiscot 131
Scott 295	Scott 375	Scott 393	Scott 463	Scott 391
Christian 625	Christian 820	Worth 919	Worth 949	Stone 942

Statewide annual harvest

1999	2000	2001	2002	2003
216,804	244,053	261,280	277,025	288,443



Hunting History

Hunting has long been an important component of deer management. In Missouri, the first modern deer season took place in 1944. This limited, two-day season followed a seven-year period in which there had not been a deer season in the state. Concern for the state's declining deer population had prompted the Conservation Commission to halt deer hunting in 1938. The average take for the four open seasons prior to 1938 had been fewer than 100 deer. Deer population for the entire state had declined to less than 2,500 animals concentrated in a few Ozark counties.

Using a four-part management approach of wild fire control, refuges, re-stocking and a closed season coupled with stringent enforcement, the deer population jumped to about 15,000 by 1944. This successful management approach resulted in a hunting season being re-established. In addition to the short, two-day season, the Conservation Commission limited the 1944 hunting season to just 20 counties. This first modern season yielded 564 bucks. Deer continued to flourish under limited hunting. Now, 60 years after that first modern season, the 2003 deer season recorded a harvest of 288,443 deer. The challenge of today's conservationists is not restoring deer; it is managing their populations. Hunting regulations continue to be a primary tool for managing Missouri's growing deer populations. Today's regulations have evolved from very limited bucks-only opportunities to a much more liberal set of management tools.

For more information on the rules and regulations for the 2004 deer season, visit the Conservation Department website at www.missouriconservation.org.

Habits & Habitat

Habits

Most deer activity takes place around dusk and dawn with brief periods of activity during midday. These patterns vary with the time of year and the weather. Recent studies suggest that deer are most active at low humidity and show increased movement during overcast periods. High winds decrease deer movements, and approaching storms increase them. During winter, deer move later in the morning and increase activity during warm spells.

Deer activity varies by season with peaks during spring and fall. The least active months are January, February and June through August. During fall, deer are active during breeding periods and while feeding to prepare for winter. Spring brings abundant food resources, and deer have increased metabolic demands due to pregnancy and growing antlers. Females are more active than males from January to July, and males are more active from September to October. Buck fawns are more active than doe fawns.

The size and shape of a deer's home range vary with habitat quality, deer density, sex, time of year and the deer's age. Deer that live in the best habitats can satisfy all their daily requirements in a smaller area; deer that live in less diverse habitats must travel to find suitable food and cover. Most home ranges tend to be elongated, and researchers theorize that this shape maximizes available resources. Deer living in diverse habitats with lots of edge and an even distribution of food and cover tend to have more circular home ranges. Adult bucks have larger overall home ranges than does and young bucks. As a general rule, deer have the smallest home ranges during summer and the largest during fall.

Habitat

Deer live primarily in timbered areas, selecting the borders or edges more than dense, uniform stands. One of the main reasons for this habitat preference is that the variety of foods deer like grows best along the margins of timbered areas or in clearings in the timber. Another reason, especially true in the more agricultural sections of the country, is that the deer can utilize the forage offered by agricultural crops adjacent to timbered lands and still have the sanctuary and other attractions of the timber itself.

Deer have been documented eating more than 600 different types of plants. Deer in the Ozark region of Missouri live in chiefly wooded areas and rely on natural forage, such as grape vines, green briar, Virginia creeper, oak leaves, pussy toes, clovers and prickly lettuce. During spring and summer, deer eat perennial plants more than annuals.

Studies in agricultural areas of Missouri indicate cultivated crops comprised 41 percent of deer diet by volume. Most researchers found wild browse, fruits and seeds also are major food items. Deer prefer corn, soybeans and hay from the variety of agricultural crops, but also enjoy milo, wheat, alfalfa, clover and sunflowers.

Oak mast and leaves, coralberry and various forbs are important wild browse food for deer in agricultural areas. These differences in plant use and regional food habit studies are likely a reflection of plant availability. Agricultural crops may be preferred when they are available, but deer still rely on early successional plants and oak mast.

Instructional Ideas

- Look at the deer harvest numbers by county and draw some correlations between those numbers and the predominant habitat in those counties. (See page 7)
- Identify factors which may influence deer populations and annual harvests.

Inviting Deer

Some areas in Missouri do not have the numbers of deer that landowners would like to see. If increasing deer numbers is a desired outcome, the following are some ways to encourage deer to your property.

- Cutting timber creates brush and low browse for food and cover. If your land or the combined land of cooperating neighbors is mostly mature forest, create thick cover by removing some trees to allow shrubs and young trees to grow. Consider planting tree seedlings and shrubs. If major tree-cutting is not an option, you can increase forest/field edge habitat by cutting small patches of trees along the field.
- Food plots offer food year-round. On larger acreage, plantings of clover or alfalfa provide deer with nourishment in the spring period of critical growth. Plots planted with a grain such as milo provide food energy for deer during winter months. Vegetation such as turnips and sugar beets can provide a naturally sweet draw for deer and other wildlife. In smaller areas, deer favorites seem to be arborvitae, euonymus, mulberry, rhododendron, rose and yew. Their second choice menu would include flowering fruit trees, fir, pine, serviceberry, dogwood, some junipers and most hollies.

Discouraging Deer

In some areas deer are overabundant, causing damage to the landscape and proving hazardous to drivers. If discouraging deer from a property is the desired outcome, food strategies could prove useful. Deer are generalists and, before starving, will eat almost any plant. However, given a choice, they prefer some plants over others. To discourage deer, use of distasteful plantings would be a good approach.

- Distasteful ornamentals are barberry, bayberry, boxwood, cotoneaster, grape holly, hydrangea, most junipers, kerria, mockorange, potentilla, privet, pyracantha, quince, smoketree, spice bush, spirea, viburnum, weigela and witch hazel.
- The perennials and vines seldom favored by deer include achillea, artemesia, astilbe, bee balm, black-eyed Susan, celastus, coreopsis, dicentra, some geranium, Siberian iris, lavender, liatris, peony, evening primrose, salvia, sedum, veronica, Virginia creeper and wisteria.



Amazing Antlers

Adapted From: Antlers Away by Joan McKee, February 2001 and Buck Fever by Lonnie Hansen, November 1991

One of the most recognizable features of male white-tailed deer are antlers. Bucks grow and shed these bony extensions each year. Antler is among the fastest growing tissue known to man. Starting in early spring, the blood traveling through a soft layer of skin on top of a buck's head contains a lot of calcium, phosphorus and protein. By August, these minerals have formed into a full grown set of antlers.

During the growing period, antlers are covered by an outer coating of skin and short hair called velvet. After the antlers reach full size, the blood vessels stop delivering the minerals to them, and the velvet coating dries out. Bucks rub their antlers against trees and shrubs to help remove the dried velvet and to polish the antlers. This rubbing coincides with buck breeding activities, commonly called "the rut," which extends from September through December. Rubbing may occur anytime during the rut but is most intense early when velvet is being shed. Although rubbing removes velvet, the primary purposes are to communicate with other deer and perhaps strengthen neck muscles.

After the breeding season, sometime in January or February, the bone around the base of the antlers weakens and the antlers are shed. Mice, rabbits, squirrels and other rodents recycle antlers by gnawing at them for their minerals and proteins. Shed antlers are also used by artists and craftsmen to make decorative art and furniture.

Antlers are most typically found on bucks. However, Missouri hunters report does with antlers each year. This oddity occurs on fewer than one in one thousand does. When they are present, these antlers are usually small and have velvet that is never shed. A hormonal imbalance or injury to the head may cause this condition.

Three primary factors affect the size of the antlers: age, genetics and nutrition. In Missouri, the most common factor is age. The first year a buck has only buttons, which appear as small knobs on the forehead. By 1.5 years of age, the buck grows his first set of antlers. These tend to be small, ranging from a pair of spikes to a small rack with six to eight points. Antlers continue to increase in size until the deer reaches six to seven years of age. Antlers of bucks older than seven years tend to decrease slightly in size and are more likely to be malformed.

A buck that lives to be 3.5 years or older anywhere in the state almost invariably will produce a rack that will be a trophy to the majority of deer hunters.



Not the Typical Antler

Non-typical or oddly shaped antlers are common in white-tailed deer. These antlers may have anything from points coming off the main beam at odd locations to freak sets of antlers that do not look anything like white-tailed deer antlers.

Genetics plays a role in some non-typical antler growth. However injury is a more common factor. The effect of injury is most dramatic when it involves the pedicel (part of the skull from which the antler grows) or an antler tip just beginning to grow. Although the injury may heal, the effects on antler growth may continue for several years.

Antlers or Horns

Many people inappropriately use the term "horns" when in fact they are talking about "antlers." Both horns and antlers are found on a variety of ungulates—hooved mammals whose meals are made up almost entirely of plants. Here are a few differences between the two.

Antlers

Grow from spring to fall
Are fast growing
Are often elaborately branched
Are shed each year
Are made of minerals, like bone
Are solid

Horns

Grow year-round
Are slow growing
Are not usually branched
Remain on the animal
Are made of keratin, like hooves
Are hollow

MISSOURI CONSERVATIONIST *Connections*



The *Missouri Conservationist* magazine provides a wealth of information about the forest, fish and wildlife resources of the state. Listed below are recent articles pertaining to deer management and associated topics. These articles are available to view or print from the Department of Conservation website at <www.missouriconservation.org>. To access the articles, follow the indicated instructions.

To access the *Missouri Conservationist* Archive

Click on "Magazine" link in the top banner.

Click on "Magazine Archive" link in the top banner.

Choose the issue you'd like to view.

(Note: Some issues can be brought up in PDF format for printing.

Check at the bottom of the issue's front page for the PDF link.)

"Observing by Watching — Vantage Point"

by John Hoskins, June 2004

Editorial written by the Missouri Department of Conservation's Director on the new direction in deer management based on the results of public meetings held around the state.

"Managing the Herd"

by Bill Heatherly and Lonnie Hansen, April 2004

Deer managers are looking for ways to shift harvest pressure from bucks to does so deer numbers can be managed more effectively. At a series of public meetings, the Conservation Department presented five management options that wildlife biologists believe would accomplish this goal and asked folks for their input on them.

"The Essential White-Tailed Deer"

by Kyle Carroll, January 2004

For early explorers and settlers, venison was a staple and deer skins were currency.

"Trimming the Deer Herd"

by Bill Heatherly and Tom Hutton, October 2003

Sport hunting is the Conservation Department's most effective tool for controlling deer numbers.

"Chronic Wasting Disease"

by Eric W. Kurzejeski, November 2002

Working to keep Missouri's deer herd healthy.

"How Big Was That Deer?"

by Lonnie Hansen and Dale H. Ream Jr., August 2002

Large antlers cast their spell over hunters.

"Deer in the City"

by Mike Schroer, November 1999

Easy living allows whitetails to overcrowd our urban areas.

"Who is Responsible for Deer Management?"

by Jeff Beringer and Lonnie Hansen, October 1997

Outlines the actions individual landowners can take in managing deer populations.

"Downtown Deer"

by Tom Cwynar, October 1997

Whitetails are invading our urban jungles.

To access the *Outside In* Archive

Click on "Education" link in the top banner.

Click on "Missouri Conservationist & Outside In" link in the green box on the left.

Click on "Outside In" link on the left.

Click on "Magazine Archive" in the top banner.

Choose the issue you want to view.

"Antlers Away"

by Joan McKee, February 2001

Why does a buck need a hat rack? And after growing one all year, why just throw it away?

Web Resources

"Too Many Deer"—A Case Study

< http://ublib.buffalo.edu/libraries/projects/cases/deer/deer_notes.html >

This case study uses various techniques to examine a common urban forest management problem. Designed for college biology, this case could be successfully used in a high school class by restructuring the activities and asking different questions.

Quality Deer Management Association

< <http://www.qdma.com/> >

Current articles, press releases and event listings. Includes articles on data collection, deer biology, food plots, habitat, herd management, etc.

What is Quality Deer Management?

< <http://www.outdoorsite.com/site/go.cfm/owner/55887572-24EC-4CFA-A01702B2B290C5FB> >

Informative article on Quality Deer Management. Also has links to other whitetail articles.

Chronic Wasting Disease

< <http://www.aphis.usda.gov/lpa/issues/cwd/cwd.html> >

Recent initiatives regarding chronic wasting disease from the Animal and Plant Health Inspection Service.

Boone & Crockett Club

< <http://www.boone-crockett.org/> >

A non-profit organization that provides information and resources to address the issues that affect hunting, wildlife and wild habitat.

Pope and Young Club

< <http://www.pope-young.org/> >

A conservation organization that advocates and encourages responsible bowhunting by promoting quality, fair chase hunting and sound conservation practices.

Missouri Whitetails

< <http://www.mdc.state.mo.us/nathis/mammals/deer/> >

A management guide for landowners and deer enthusiasts written by staff at the Missouri Department of Conservation.

Publications

Quality Deer Management: The Basics and Beyond

Alsheimer, Charles J. This full-color book thoroughly explores the tenets of Quality Deer Management, including land development, proper animal harvest, obtaining good doe-to-buck ratios, developing nutritious food sources, and many more principles that lead to healthier deer herds and bigger bucks with larger antlers. ISBN: 0873493354, <www.amazon.com> (\$27.96)

Grow 'Em Right: A Guide to Creating Habitat and Food Plots

Dougherty, Neil and Craig Dougherty. A comprehensive, easy-to-follow guide book on how to create quality deer hunting through habitat development and food plots. ISBN: 0972935606, <www.amazon.com> (\$19.95)

Planting Food Plots for Deer and Other Wildlife

Weiss, John. This one-of-a-kind book is the absolute ultimate source on the subject of planting food plots to attract and hold deer, turkey, bear, upland birds, waterfowl and small game to the lands you hunt. ISBN: 0970749341, <www.amazon.com> (\$24.95)

Quality Whitetails:

The Why and How of Quality Deer Management

Marchinton, Larry R. and Karl V. Miller. This contains the expertise of some of the most knowledgeable white-tailed deer biologists in North America. It explains deer management in general and quality deer management in particular. ISBN: 0811713873, <www.amazon.com> (\$24.46)

White-Tailed Deer: Ecology and Management

Halls, Lowell K. This book chronicles the history, biology and ecology of the deer in all its diverse habitats. Designed to be of use and interest to educators and students, as well as sportsmen, conservation enthusiasts, wildlife biologists, researchers, etc. ISBN: 0811704866, <www.amazon.com> (\$54.37)

The Science of Overabundance:

Deer Ecology and Population Management

McShea, William, H. Brian Underwood and John H. Rappole. This detailed examination of deer overabundance addresses broader issues of wildlife overpopulation. Good resource for students. ISBN: 1588340627, <www.amazon.com> (\$21.95)

Chronic Wasting Disease (Epidemics)

Payan, Gregory and Casey Gallagher. Describes Chronic Wasting Disease, a deadly disease that affects deer and elk, detailing its cause and symptoms, as well as research that is being done to control the epidemic and find a cure. Grades 5-8, ISBN: 0823941981, <www.rosenpublishing.com> (\$19.95)

Whitetails: Behavior, Ecology, Conservation

Bauer. A comprehensive look at this species; discusses subspecies, food habits, life cycles, behavior and variety and function of antlers. <<http://acornnaturlists.com>>, #MAM-7377 (\$19.95)

Our Wild World Series: Whitetail Deer

Evert. Learn how bucks grow and shed antlers, what deer eat, how they survive the winter, why fawns have spots and how deer populations fluctuate over time. Ages 6-12. <<http://acornnaturlists.com>>, #MAM-10134 (\$7.95)

Missouri Department of Conservation Publications

You may order any of the following free items by contacting our Distribution Center at 573/522-4115 x3630, e-mail at pubstaff@mdc.mo.gov or writing to: Distribution Center, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180.

E00232 Mammals – White-tailed Deer
PLS033 Nuisance Deer Damage
SCI140 Chronic Wasting Disease
W00049 Common Questions About Deer
W00159 Deer Management in Missouri
W00181 Deer Hunting in Missouri

Media Loan

You may borrow the following items by contacting our Media Librarian at 573/751-4115 x3821, fax at 573/522-2020, e-mail at pubstaff@mdc.mo.gov or writing to: Media Librarian, Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180.

Time Shadows: Encounter With the Whitetail

Upper Elementary-Adult/ 24 minute video

The Department of Conservation began re-introducing white-tailed deer to Missouri in the 1920s. Few animals can match the success of the deer's return. This film considers the experiences of a farmer, a hunter and a biologist to show how we are affecting deer today. For urban and rural audiences.

Bowhunting: A Timeless Tradition

Adult/ 15 minute video

From the experiences of two young hunters, learn a code of ethical standards and the basic knowledge (personal safety, equipment, technique, etc.) that make bowhunting an enjoyable sport.



Project Connections

Turn your students into wildlife managers and biologists with these interdisciplinary, hands-on, easy-to-use activities from Project WILD. To receive this nationally acclaimed conservation education curriculum and activity guide, attend the next Project WILD training workshop in your area. For information on Project WILD workshops and materials, contact Syd Hime, State Coordinator, Missouri Department of Conservation, P.O. Box 180, Jefferson City, MO 65102, 573/522-4115 x3370, <Syd.Hime@mdc.mo.gov>

Oh Deer! – Page 36—Identify and describe food, water and shelter as three essential components of habitat; describe factors that influence carrying capacity; define “limiting factors” and give examples; recognize that some fluctuations in wildlife populations are natural as ecological systems undergo change. Grades 5-8.

Carrying Capacity – Page 46—Formulate and test hypotheses related to wildlife populations and carrying capacity; describe the significance of carrying capacity. Grades 9-12.

History of Wildlife Management – Page 267—Define wildlife management; describe major trends in wildlife management philosophies and practices. Grades 5-8.

The Hunter – Page 287—Describe their feelings about hunting; compare their attitudes to those of other people; make personal judgments about the appropriateness of hunting. Grades 5-8.

Wildlife Issues: Community Attitude Survey – Page 297—

Assess the values held by various groups and individuals regarding some selected issue; distinguish between beliefs, values and attitudes. Grades 9-12.

Checks and Balances – Page 387—Evaluate hypothetical wildlife management decisions; identify at least four factors that can affect the size of a wildlife population. Grades 5-8.

Deer Crossing – Page 392—Identify various factors involved in a wildlife management issue; evaluate alternatives in a complex issue involving wildlife. Grades 9-12.

Dropping in on Deer – Page 420—Describe how habitat surveys provide important baseline information to guide management decisions; apply field methodologies reflecting wildlife management practices developed through an understanding of species biology and ecosystem structure; explain the importance of scientific knowledge and technical skills in the conservation, limitation, preservation and enhancement of wildlife and its habitat. Grades 9-12.

Deer Dilemma – Page 426—Define wildlife management as the application of scientific knowledge and technical skills to protect, preserve, conserve, limit or enhance wildlife and its habitat; describe how wildlife resources can be managed and conserved; demonstrate their understanding that wildlife species are important components of a larger ecosystem that should be managed within the context of that ecosystem; distinguish between consumptive and non-consumptive resource uses; consider the needs of people as well as wildlife in the sustainability of the resource; distinguish between game, non-game, endangered and threatened species of wildlife. Grades 9-12.

No M0re Trash

Raising awareness of what citizens can do to make Missouri a litter-free state is the goal of this statewide anti-litter campaign. To help spread the “No M0re Trash” message, the campaign sponsors a video contest for students 22 years or younger. A \$200 prize is paid to the best 30-second video designed to convince peers to stop littering. Entry deadlines for the 2004-05 school year are October 31, January 31 and April 30. For more information, rules and entry forms, go to <www.nomoretrash.org>.



Outdoor Classroom Grants

The Missouri Department of Conservation is pleased to offer Missouri schools the Show-Me Conservation Outdoor Classroom Grant Program. The program is designed to promote interdisciplinary, hands-on instruction through conservation education in the out-of-doors. Grants in amounts up to \$1,000 will be awarded to public, private or parochial schools interested in developing or enhancing outdoor learning areas.

Applications are due March 18, 2005. Approved projects need to be completed by May 10, 2006. For application forms, visit www.missouriconservation.org/teacher/outdoor, or contact Syd Hime, 573/522-4115 x3370, Syd.Hime@mdc.mo.gov.

Missouri Hunter Education Course

This course is required for anyone born on or after January 1, 1967, who is interested in obtaining a hunting permit in Missouri. The 10-hour course is being offered multiple times from October through December at several locations across the state. For registration information, dates and locations, visit the Missouri Department of Conservation website at <www.missouriconservation.org/events/> or contact Christy Falter by email at Christy.Falter@mdc.mo.gov or by phone at 573/522-4115, x3256.

Outdoor Skills Courses

For information about Outdoor Skills courses offered by the Missouri Department of Conservation, visit our web site at <www.missouriconservation.org/events/> or contact your local regional office.

Educator Workshops

For information about the Department of Conservation's Educator Workshops, visit our web site at <www.missouriconservation.org/teacher/workshops.html> or contact your local regional office.

Conservation Education Materials

Listing over 80 titles, the Conservation Education Materials Request Form includes instructional resources, student activity books, posters and programs available to Missouri Educators. Materials can be ordered through the Department's web site at www.missouriconservation.org/teacher/ or by contacting your local regional office.

Regional Offices

Central Office, Jefferson City	573/751-4115
Central Regional Office	573/882-8388
Kansas City Regional Office	816/655-6254
Northeast Regional Office	660/785-2424
Northwest Regional Office	816/271-3111
Ozark Regional Office	417/255-9561
Southeast Regional Office	573/290-5730
Southwest Regional Office	417/895-6881
St. Louis Regional Office	636/300-1953

Conservation Careers

Wildlife Management Biologist

The duties and responsibilities of a wildlife management biologist are many and varied—from coordinating the management, maintenance and operation of conservation areas to writing wildlife management plans and habitat proposals to conducting wildlife inventories and evaluation projects. But by far the most essential skill needed for this job is public speaking. Wildlife biologists use this skill on a daily basis with the walk-in and call-in public, when conducting programs and presentations and when interacting with patrons using Missouri Department of Conservation public conservation areas.

Being a wildlife management biologist is a challenging position. Biologists need to be able to “think off the top of their heads” because they can never anticipate what types of questions someone may ask—questions ranging from nuisance animal concerns to trespassing and game laws. In addition, biologists must juggle the needs and interests of multiple user groups on public land; traditional activities such as hunting and fishing must be balanced with non-traditional activities such as mushrooming and bird watching. It is also a challenge to balance public user groups, to limit potential conflicts between uses, and to set boundaries, although this aspect of the job is more prevalent in urban areas with larger populations and limited public lands than it is in rural areas.

But with all its challenges, being a wildlife biologist is a very rewarding position. Biologists have opportunities to meet a wide variety of people who love the outdoors, making it easy to find things of common interest to talk about. But more importantly, biologists are able to raise people's awareness by educating them about wildlife and natural resources. For example, in response to a nuisance animal complaint, a biologist has the opportunity to talk about the animal's life history and discuss how altering human behavior can often contribute to solving the problem.

Wildlife management biologists with the Missouri Department of Conservation have graduated from an accredited college or university with a Bachelor's Degree in Wildlife, Forestry or Agriculture and have had at least three years experience in the field.



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